



## DEPARTMENT OF THE INTERIOR

### Fish and Wildlife Service

#### 50 CFR Part 17

[Docket No. FWS–R6–ES–2021–0134; FF09E21000 FXES1111090FEDR 223]

RIN 1018–BE98

### Endangered and Threatened Wildlife and Plants; Threatened Species Status with Section 4(d) Rule for the Silverspot Butterfly

**AGENCY:** Fish and Wildlife Service, Interior.

**ACTION:** Proposed rule.

**SUMMARY:** We, the U.S. Fish and Wildlife Service (Service), propose to list a subspecies of butterfly (*Speyeria nokomis nokomis*), a silverspot butterfly from Colorado, New Mexico, and Utah, as a threatened species under the Endangered Species Act of 1973, as amended (Act), with a rule issued under section 4(d) of the Act (“4(d) rule”). This document also serves as our 12-month finding on a petition to list the silverspot. After a review of the best available scientific and commercial information, we find that listing the subspecies is warranted. If we finalize this rule as proposed, it would add this subspecies to the List of Endangered and Threatened Wildlife and extend the Act’s protections to the subspecies. We determined that designating critical habitat for this subspecies under the Act is not prudent.

**DATES:** We will accept comments received or postmarked on or before **[INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

Comments submitted electronically using the Federal eRulemaking Portal (see

**ADDRESSES**, below) must be received by 11:59 p.m. Eastern Time on the closing date.

We must receive requests for a public hearing, in writing, at the address shown in **FOR**

**FURTHER INFORMATION CONTACT** by **[INSERT DATE 45 DAYS AFTER**

**DATE OF PUBLICATION IN THE FEDERAL REGISTER].**

**ADDRESSES:** *Written comments:* You may submit comments by one of the following methods:

(1) *Electronically:* Go to the Federal eRulemaking Portal:

<https://www.regulations.gov>. In the Search box, enter the docket number or RIN for this rulemaking (presented above in the document headings). For best results, do not copy and paste either number; instead, type the docket number or RIN into the Search box using hyphens. Then, click on the Search button. On the resulting page, in the Search panel on the left side of the screen, under the Document Type heading, check the Proposed Rule box to locate this document. You may submit a comment by clicking on “Comment.”

(2) *By hard copy:* Submit by U.S. mail to: Public Comments Processing, Attn: FWS-R6-ES-2021-0134, U.S. Fish and Wildlife Service, MS: PRB/3W, 5275 Leesburg Pike, Falls Church, VA 22041-3803.

We request that you send comments only by the methods described above. We will post all comments on <https://www.regulations.gov>. This generally means that we will post any personal information you provide us (see **Information Requested**, below, for more information).

*Availability of supporting materials:* For this proposed rule, supporting materials are available at <https://www.regulations.gov> under Docket No. FWS-R6-ES-2021-0134, and at the Western Colorado Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

**FOR FURTHER INFORMATION CONTACT:** Ann Timberman, Western Colorado Supervisor, U.S. Fish and Wildlife Service, Western Colorado Ecological Services Field Office, 445 West Gunnison Avenue, Grand Junction, CO 81501; telephone 970-628-7181. Individuals in the United States who are deaf, deafblind, hard of hearing, or have a speech disability may dial 711 (TTY, TDD, or TeleBraille) to access telecommunications

relay services. Individuals outside the United States should use the relay services offered within their country to make international calls to the point-of-contact in the United States.

## **SUPPLEMENTARY INFORMATION:**

### **Executive Summary**

*Why we need to publish a rule.* Under the Act, a species warrants listing if it meets the definition of an endangered species (in danger of extinction throughout all or a significant portion of its range) or a threatened species (likely to become endangered in the foreseeable future throughout all or a significant portion of its range). We have determined that the silverspot butterfly (*Speyeria nokomis nokomis*) meets the definition of a threatened species; therefore, we are proposing to list it as such. We have determined that designation of critical habitat is not prudent. Both listing a species as an endangered or threatened species and designating critical habitat can be completed only by issuing a rule through the Administrative Procedure Act rulemaking process.

*What this document does.* We propose to list the silverspot butterfly as a threatened species with a 4(d) rule.

*The basis for our action.* Under the Act, we may determine that a species is an endangered or threatened species because of any of five factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence. We have determined that habitat loss and fragmentation, incompatible livestock grazing, human-caused hydrologic alteration, genetic isolation, and the effects of climate change negatively affect the silverspot butterfly's viability at a population level.

Section 4(a)(3) of the Act requires the Secretary of the Interior (Secretary) to designate critical habitat concurrent with listing to the maximum extent prudent and determinable. Section 3(5)(A) of the Act defines critical habitat as (i) the specific areas within the geographical area occupied by the species, at the time it is listed, on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protections; and (ii) specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination by the Secretary that such areas are essential for the conservation of the species. Section 4(b)(2) of the Act states that the Secretary must make the designation on the basis of the best scientific data available and after taking into consideration the economic impact, the impact on national security, and any other relevant impacts of specifying any particular area as critical habitat. In the case of the silverspot butterfly, we found that designating critical habitat was not prudent, as explained later in this document.

### **Information Requested**

We intend that any final action resulting from this proposed rule will be based on the best scientific and commercial data available and be as accurate and as effective as possible. Therefore, we request comments or information from other concerned governmental agencies, Native American Tribes, the scientific community, industry, or any other interested parties concerning this proposed rule.

We particularly seek comments concerning:

(1) The subspecies' biology, range, and population trends, including:

(a) Biological or ecological requirements of the subspecies, including habitat requirements for feeding, breeding, and sheltering;

(b) Genetics and taxonomy;

(c) Historical and current range, including distribution patterns;

(d) Historical and current population levels, and current and projected trends; and

(e) Past and ongoing conservation measures for the subspecies, its habitat, or both.

(2) Factors that may affect the continued existence of the subspecies, which may include habitat modification or destruction, overutilization, disease, predation, the inadequacy of existing regulatory mechanisms, or other natural or manmade factors.

(3) Biological, commercial trade, or other relevant data concerning any threats (or lack thereof) to this subspecies and existing regulations that may be addressing those threats.

(4) Additional information concerning the historical and current status, range, distribution, and population size of this subspecies, including the locations of any additional populations of this subspecies.

(5) Information on regulations that are necessary and advisable to provide for the conservation of the silverspot butterfly and that the Service can consider in developing a 4(d) rule for the subspecies. In particular, information concerning the extent to which we should include any of the Act's section 9 prohibitions in the 4(d) rule or whether we should consider any additional exceptions from the prohibitions in the 4(d) rule.

(6) The reasons why we should or should not designate habitat as "critical habitat" under section 4 of the Act (16 U.S.C. 1531 *et seq.*), including information to inform the following factors that the regulations identify as reasons why designation of critical habitat may be not prudent:

(a) The species is threatened by taking or other human activity and identification of critical habitat can be expected to increase the degree of such threat to the species;

(b) The present or threatened destruction, modification, or curtailment of a species' habitat or range is not a threat to the species, or threats to the species' habitat

stem solely from causes that cannot be addressed through management actions resulting from consultations under section 7(a)(2) of the Act;

(c) Areas within the jurisdiction of the United States provide no more than negligible conservation value, if any, for a species occurring primarily outside the jurisdiction of the United States; or

(d) No areas meet the definition of critical habitat.

Please include sufficient information with your submission (such as scientific journal articles or other publications) to allow us to verify any scientific or commercial information you include.

Please note that submissions merely stating support for, or opposition to, the action under consideration without providing supporting information, although noted, will not be considered in making a determination, as section 4(b)(1)(A) of the Act directs that determinations as to whether any species is an endangered or a threatened species must be made “solely on the basis of the best scientific and commercial data available.”

You may submit your comments and materials concerning this proposed rule by one of the methods listed in **ADDRESSES**. We request that you send comments only by the methods described in **ADDRESSES**.

If you submit information via <https://www.regulations.gov>, your entire submission—including any personal identifying information—will be posted on the website. If your submission is made via a hardcopy that includes personal identifying information, you may request at the top of your document that we withhold this information from public review. However, we cannot guarantee that we will be able to do so. We will post all hardcopy submissions on <https://www.regulations.gov>.

Comments and materials we receive, as well as supporting documentation we used in preparing this proposed rule, will be available for public inspection on <https://www.regulations.gov>.

Because we will consider all comments and information we receive during the comment period, our final determinations may differ from this proposal. Based on the new information we receive (and any comments on that new information), we may conclude that the subspecies is endangered instead of threatened, or we may conclude that the subspecies does not warrant listing as either an endangered species or a threatened species. For critical habitat, we may conclude that designation of critical habitat is indeed prudent. In addition, we may change the parameters of the prohibitions or the exceptions to those prohibitions in the 4(d) rule if we conclude it is appropriate in light of comments and new information received. For example, we may expand the prohibitions to include prohibiting additional activities if we conclude that those additional activities are not compatible with conservation of the subspecies. Conversely, we may establish additional exceptions to the prohibitions in the final rule if we conclude that the activities would facilitate or are compatible with the conservation and recovery of the subspecies.

### *Public Hearing*

Section 4(b)(5) of the Act provides for a public hearing on this proposal, if requested. Requests must be received by the date specified in **DATES**. Such requests must be sent to the address shown in **FOR FURTHER INFORMATION CONTACT**. We will schedule a public hearing on this proposal, if requested, and announce the date, time, and place of the hearing, as well as how to obtain reasonable accommodations, in the *Federal Register* and local newspapers at least 15 days before the hearing. For the immediate future, we will provide these public hearings using webinars that will be announced on the Service's website, in addition to the *Federal Register*. The use of these virtual public hearings is consistent with our regulations at 50 CFR 424.16(c)(3).

## Previous Federal Actions

On July 3, 1978, we proposed to list *Speyeria nokomis nokomis* (with the common name “Great Basin silverspot butterfly”) as a threatened species with critical habitat under the Act (43 FR 28938). Due to a new range delineation (described in **Background** below), the former common name, Great Basin silverspot butterfly, is no longer valid as the subspecies is not found within the Great Basin; therefore, we will refer to the *S. n. nokomis* subspecies as “silverspot” in this proposed rule. On March 6, 1979, we withdrew the July 3, 1978, proposed rule, along with certain other proposed rules, because they did not meet requirements set forth in the Endangered Species Act Amendments of 1978 (Pub. L. 95–632, 92 Stat. 3751); see 44 FR 12382.

On May 22, 1984, we identified the silverspot as a category 2 candidate species (49 FR 21664). Category 2 candidate species comprised taxa for which information in the Service’s possession indicated that a proposal to list the species as endangered or threatened was possibly appropriate, but for which conclusive data on biological vulnerability and threat(s) were not currently available to support proposed rules at that time. Later candidate notices of review (CNOR) retained the subspecies as a category 2 candidate species (54 FR 554, January 6, 1989; 56 FR 58804, November 21, 1991; 59 FR 58982, November 15, 1994).

On February 28, 1996, we discontinued the designation of category 2 species as candidates in CNORs (61 FR 7596), and on December 5, 1996, we published a notice of final decision (61 FR 64481) to discontinue the practice of maintaining a list of species regarded as “category 2 candidates.” These actions resulted in the removal of the silverspot from the candidate list.

In 2013, WildEarth Guardians petitioned us to list the silverspot. On January 12, 2016, we published a 90-day finding (81 FR 1368) stating that the petition presented substantial scientific or commercial information indicating that the petitioned action may



be warranted and announcing our intent to proceed with a status review. In 2021, we completed a species status assessment report for the silverspot (hereafter, SSA report) to compile the best scientific and commercial data available regarding the subspecies' biology and factors that influence the subspecies' viability (Service 2021, entire).

## **Supporting Documents**

A species status assessment (SSA) team prepared an SSA report for the silverspot butterfly (Service 2021, entire). The SSA team was composed of Service biologists, in consultation with other species experts. The SSA report represents a compilation of the best scientific and commercial data available concerning the status of the subspecies, including the impacts of past, present, and future factors (both negative and beneficial) affecting the subspecies. In accordance with our joint policy on peer review published in the *Federal Register* on July 1, 1994 (59 FR 34270), and our August 22, 2016, memorandum updating and clarifying the role of peer review of listing actions under the Act, we sought the expert opinions of four appropriate specialists regarding the SSA report. We received four responses. We also sent the SSA report to partners, including scientists with expertise in the subspecies, its habitat, and genetics, for review. The SSA report provides the scientific basis for this proposed listing rule.

## **I. Proposed Listing Determination**

### **Background**

A thorough review of the taxonomy, life history, and ecology of the silverspot butterfly (hereafter, silverspot) is presented in the SSA report (Service 2021, pp. 4–24), and is briefly summarized here.

The silverspot is a relatively large butterfly with up to a 3-inch wingspan. Males typically have bright orange on the upper side of the wing, while females typically have cream or light yellow with brown or black. The underside of the wing of both sexes has silvery-white spots, giving the subspecies' the common name of silverspot butterfly.

Based on recent genetic analysis, there are five silverspot butterfly subspecies including 10 major populations of *S. nokomis* throughout the United States and Mexico (Cong *et al.* 2019, entire). We established a new, more accurate range boundary for *S. n. nokomis* in this SSA based on the genetic analysis, which limits the distribution to east-central Utah through western and south-central Colorado and into north-central New Mexico (Service 2021, p. ii). The new range delineation shows that the subspecies does not occur in the Great Basin and thus the former common name, Great Basin silverspot butterfly, is no longer valid. We refer to the *S. n. nokomis* subspecies as “silverspot” in this proposed rule.

In the SSA report, we identified 10 populations of silverspot in our analysis, including the following: Archuleta, Conejos, Costilla, Garfield, La Plata, Mesa/Grand, Montrose/San Juan, and Ouray populations in Colorado and Utah; and the San Miguel/Mora and Taos populations in New Mexico (Service 2021, figure 14 and table 4). Populations of silverspot are known to occur between 5,200 feet (ft) (1,585 meters (m)) and 8,300 ft (2,530 m). The butterfly requires moist habitats in mostly open meadows with a variety of herbaceous and woody vegetation. Eggs are laid on or near the bog violet (*Viola nephrophylla*/*V. sororia* var. *affinis*), which the larvae feed on exclusively. A variety of flowering plants provide adult nectar sources. The butterfly completes its entire life cycle in one year.

## **Regulatory and Analytical Framework**

### *Regulatory Framework*

Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations (50 CFR part 424) set forth the procedures for determining whether a species is an endangered species or a threatened species. The Act defines an “endangered species” as a species that is in danger of extinction throughout all or a significant portion of its range, and a “threatened species” as a species that is likely to become an endangered species within

the foreseeable future throughout all or a significant portion of its range. The Act requires that we determine whether any species is an endangered species or a threatened species because of any of the following factors:

(A) The present or threatened destruction, modification, or curtailment of its habitat or range;

(B) Overutilization for commercial, recreational, scientific, or educational purposes;

(C) Disease or predation;

(D) The inadequacy of existing regulatory mechanisms; or

(E) Other natural or manmade factors affecting its continued existence.

These factors represent broad categories of natural or human-caused actions or conditions that could have an effect on a species' continued existence. In evaluating these actions and conditions, we look for those that may have a negative effect on individuals of the species, as well as other actions or conditions that may ameliorate any negative effects or may have positive effects.

We use the term “threat” to refer in general to actions or conditions that are known to or are reasonably likely to negatively affect individuals of a species. The term “threat” includes actions or conditions that have a direct impact on individuals (direct impacts), as well as those that affect individuals through alteration of their habitat or required resources (stressors). The term “threat” may encompass—either together or separately—the source of the action or condition or the action or condition itself.

However, the mere identification of any threat(s) does not necessarily mean that the species meets the statutory definition of an “endangered species” or a “threatened species.” In determining whether a species meets either definition, we must evaluate all identified threats by considering the expected response by the species, and the effects of the threats—in light of those actions and conditions that will ameliorate the threats—on

an individual, population, and species level. We evaluate each threat and its expected effects on the species, then analyze the cumulative effect of all of the threats on the species as a whole. We also consider the cumulative effect of the threats in light of those actions and conditions that will have positive effects on the species, such as any existing regulatory mechanisms or conservation efforts. The Secretary determines whether the species meets the Act's definition of an "endangered species" or a "threatened species" only after conducting this cumulative analysis and describing the expected effect on the species now and in the foreseeable future.

The Act does not define the term "foreseeable future," which appears in the statutory definition of "threatened species." Our implementing regulations at 50 CFR 424.11(d) set forth a framework for evaluating the foreseeable future on a case-by-case basis. The term "foreseeable future" extends only so far into the future as the Service can reasonably determine that both the future threats and the species' responses to those threats are likely. In other words, the foreseeable future is the period of time in which we can make reliable predictions. "Reliable" does not mean "certain"; it means sufficient to provide a reasonable degree of confidence in the prediction. Thus, a prediction is reliable if it is reasonable to depend on it when making decisions.

It is not always possible or necessary to define foreseeable future as a particular number of years. Analysis of the foreseeable future uses the best scientific and commercial data available and should consider the timeframes applicable to the relevant threats and to the species' likely responses to those threats in view of its life-history characteristics. Data that are typically relevant to assessing the species' biological response include species-specific factors such as lifespan, reproductive rates or productivity, certain behaviors, and other demographic factors.

#### *Analytical Framework*

The SSA report documents the results of our comprehensive biological review of the best scientific and commercial data regarding the status of the species, including an assessment of the potential threats to the species. The SSA report does not represent a decision by the Service on whether the species should be proposed for listing as an endangered or threatened species under the Act. However, it does provide the scientific basis that informs our regulatory decisions, which involve the further application of standards within the Act and its implementing regulations and policies. The following is a summary of the key results and conclusions from the SSA report; the full SSA report can be found at Docket No. FWS–R6–ES–2021–0134 on <https://www.regulations.gov>.

To assess the silverspot's viability, we used the three conservation biology principles of resiliency, redundancy, and representation (Shaffer and Stein 2000, pp. 306–310). Briefly, resiliency supports the ability of the species to withstand environmental and demographic stochasticity (for example, wet or dry, warm or cold years), redundancy supports the ability of the species to withstand catastrophic events (for example, droughts, large pollution events), and representation supports the ability of the species to adapt over time to long-term changes in the environment (for example, climate changes). In general, the more resilient and redundant a species is and the more representation it has, the more likely it is to sustain populations over time, even under changing environmental conditions. Using these principles, we identified the silverspot's ecological requirements for survival and reproduction at the individual, population, and subspecies levels, and described the beneficial and risk factors influencing the subspecies' viability.

The SSA process can be categorized into three sequential stages. During the first stage, we evaluated the individual subspecies' life-history needs. The next stage involved an assessment of the historical and current condition of the subspecies' demographics and habitat characteristics, including an explanation of how the subspecies arrived at its

current condition. The final stage of the SSA involved making predictions about the subspecies' responses to positive and negative environmental and anthropogenic influences. Throughout all of these stages, we used the best available information to characterize viability as the ability of a species (or in this case, subspecies, which is a listable entity under the Act) to sustain populations in the wild over time. We use this information to inform our regulatory decision.

### **Summary of Biological Status and Threats**

In this discussion, we review the biological condition of the subspecies and its resources, and the threats that influence the subspecies' current and future condition, in order to assess the subspecies' overall viability and the risks to that viability.

#### *Species Needs*

##### **Individual Needs**

Individual silverspot needs include wet meadows supported by springs, seeps, streams, or irrigated areas that contain the bog violet host plant for eggs and larvae and other herbaceous vegetation for cover and food resources. The butterflies may benefit from a light interspersed of willow or other shrubs for shade and for larval shelter. More dense willow and shrubs often surround open meadows where silverspots occur and, as long as the woody vegetation does not take over the meadows, the margins of denser stands can be beneficial for shade and shelter as well.

##### **Population Needs**

Populations need abundant individuals within habitat patches of adequate size and quality to maintain survival and reproduction. In general, the greater the suitable habitat acreage, and the greater the number of individuals within a population, the greater the resilience. Furthermore, colonies and populations need to be close enough to each other for individuals to breed with each other in order to maintain genetic diversity. Silverspots likely do not fly more than 5–10 miles (mi) (8–16 kilometers (km)) and would likely

have difficulty finding another colony beyond this distance (Ellis 2020a, 2020b, 2020c, pers. comm.). Additionally, silverspots need the bog violet to be of sufficient extent and density to support colonies and populations. We define colonies to mean areas of abundant violets that produce butterflies, as well as surrounding habitat with nectar sources. If there is narrow but contiguous nectaring habitat up or down a drainage but without violets (or with only sparse violets), we consider those areas transitional corridors that are likely valuable for dispersal and genetic connectivity.

The silverspot and other *S. nokomis* subspecies can move between colonies within a continuous or nearly continuous riparian zone (Arnold 1989, pp. 10, 14; Fleishman *et al.* 2002, p. 708). For example, six colonies occurred along a 5-mi stretch in Unaweep Canyon that had likely genetic interchange (Ellis 1989, p. 3). However, these are considered separate colonies due to the natural or human-caused patchiness of bog violets up and down the canyon. In a mark-recapture study (Arnold 1989, pp. 10, 14, 21) in Unaweep Canyon, about 50 percent of the recaptured butterflies moved between two colonies separated by about 0.75 mi (1.2 km). Based on this work, it was speculated that silverspots could easily move at least 1 mile, and, based on this, Ellis (1989, p. 19) further speculated that there was exchange of individuals among all the Unaweep Canyon colonies every 1 to 5 years. This information also provided the basis for Ellis' professional judgement that colonies or populations farther than 5 to 10 mi (8 to 16 km) from each other are likely isolated (Ellis 2020a, 2020b, 2020c, pers. comm.).

Some silverspot populations have single colonies, while others have more than one colony, creating a metapopulation. A metapopulation structure is where individuals in colonies are close enough to interbreed and can recolonize temporarily extirpated colonies. Colonies in a functioning metapopulation can be recolonized if local naturally occurring (stochastic) events cause extirpation of a colony. For instance, a flood may extirpate a colony, but if there is a nearby source for the bog violet and associated plant

species, the area may return to suitable habitat condition and be recolonized by the butterfly.

Unfortunately, there is very little information on what an adequate-sized habitat patch for silverspot is, especially if there is only a single colony in a population. A professional estimate for minimum patch size of colonies is 2 acres (ac) (0.8 hectares (ha)) if the habitat has a reliable groundwater source and has high violet density; 5 ac (2 ha) if violets are less dense due to natural or human-caused variability within a patch (Ellis 2020c, pers. comm.). Although it is possible a single 2-acre or 5-acre patch of habitat could support the butterfly for a period of time, a more resilient population will likely contain at least three colonies of those sizes or greater. A three-colony metapopulation will have a better chance of survival by spreading the risk of extirpation if a natural event occurs at one or two of the colonies. Thus, the remaining one or two colonies can recolonize the extirpated sites assuming suitable habitat remains or reestablishes. Due to natural variability in soil and topographic conditions, we assume that most areas within the silverspot's range are likely to have a lower density of violets, rather than dense violets (Service 2021, p. 21). Consequently, under this assumption, a minimum amount of habitat for a sufficiently resilient population may be 12 ac (5 ha) and this can be made up of multiple colonies as long as they are at least 2 ac (0.8 ha) in size (Service 2021, p. 21). Due to its isolation, a single-colony population likely needs to have hundreds of acres of habitat in order to ensure there are enough butterflies to maintain genetic diversity and viability over the long term (Service 2021, p. 21). The specific minimum threshold for single colonies to maintain viability is unknown, but the larger the acreage is, the greater the resiliency and higher likelihood of viability.

There is also little information on the minimum number of silverspot individuals needed to sustain a colony. There have only been two demographic studies for silverspot that occurred at the same locations 10 years apart: 1979 and 1989 (Arnold 1989). The



1989 study found a daily estimate of between 48 and 260 butterflies with two different models at the Unaweeep Seep colony (Arnold 1989, pp. 6, 14). A combined population estimate at the Unaweeep Seep colony and another upstream colony in Unaweeep Canyon (which is considered two colonies due to intervening transitional habitat) resulted in a range of daily abundance from 594 to 2,689 butterflies. Quality of habitat may have as much weight in determining resiliency of a colony or population as does overall size of a habitat patch or number of individuals. Habitat quality could potentially be measured by density of violets. The Unaweeep Seep study (Arnold 1989, p. 20) revealed that the larger colony with many individuals became extirpated, likely due to vegetative encroachment, while the upstream colony with more violets remained extant. Consequently, populations appear to have greater chance for survival when containing more violets.

Based on observation of grazed and burned properties in Unaweeep Canyon, it was determined that occasional or well-managed grazing and burning likely benefit the violet by reducing willows, as well as reducing thatch buildup from grasses and sedges (Arnold 1989, p. 14; Ellis 1989, pp. 18, 19). Consequently, natural factors or management activities that lead to early seral stages or at least more open conditions where willow, grass, sedge or other vegetation does not outcompete violets is important to colonies and populations.

Single-colony populations likely need to have a very large habitat area, in the hundreds of acres, but might still need occasional immigration from other populations to maintain genetic diversity and resiliency for long-term persistence. Based on the scant evidence, the minimum number of individuals that are needed to sustain a silverspot colony or population is unknown, and even apparent natural but detrimental habitat factors, such as excessive growth of other plants, can cause extirpation of seemingly large colonies. Without additional study, it is not known what the minimum habitat size is to maintain viability, nor what density or abundance of bog violets or nectar sources is

needed to sustain a colony or population, nor the maximum distance between colonies or populations that can be reached for genetic interchange to still be able to occur on a regular basis. Furthermore, it is unknown if very large single-colony populations can be sufficiently resilient without occasional genetic interchange from other populations.

In summary, to be adequately resilient, silverspot populations need water to sustain violets for the larvae, as well as occasional or seasonal disturbance by grazing from native ungulates or domestic livestock, or burning, mowing, or non-catastrophic flooding, to occasionally remove vegetation that might otherwise crowd out the violets and other nectar plants for the adults. Furthermore, based on expert opinion and evidence from Arnold (1989) and Ellis (1989), the most resilient populations need to be at least 2 ac (0.8 ha) in size with dense violets or at least 5 ac (2 ha) in size with less dense violets, and need to have a few to several colonies within 0.75 to 5 mi (1.2 to 8 km) of each other and likely be not more than 10 mi (16 km) from each other (Ellis 2020c, pers. comm.).

#### Species Needs

To maintain viability, silverspots need to have a sufficient quality and quantity of habitat for adequately resilient populations, numerous populations to create redundancy in the event of catastrophic events, and broad enough genetic and ecological diversity to adapt to changing environmental conditions (representation). The subspecies will have a better chance of long-term viability if single-colony populations and even the metapopulations occasionally receive individuals from other populations such that genetic interchange occurs and they are able to adapt more readily to environmental changes.

#### *Factors Influencing Subspecies Viability*

We reviewed the potential risk factors (i.e., threats, stressors) that could be affecting the silverspot now and in the future. In this proposed rule, we will discuss only those factors in detail that could meaningfully impact the status of the subspecies. Habitat

loss and fragmentation, human-caused hydrologic alteration, livestock grazing, genetic isolation, exotic plant invasion, climate change, climate events, larval desiccation, and collecting are all factors that influence or could influence the subspecies' viability. Those risks that are not known to have effects on silverspot populations, such as disease, predation, prescribed burning or wildfire, and pesticides, are not discussed here but are evaluated in the SSA report.

#### Habitat Loss and Fragmentation

Habitat loss from golf course and housing development caused extirpation of two historical colonies north of Durango, Colorado (Ellis and Fisher 2020, pers. comm.). The remaining known site in the La Plata population has residential and commercial development across the street from it, and one of two drainages supplying it water has relatively new housing and golf courses all around within 1.5 air miles (2.4 km), potentially degrading downstream silverspot habitat through hydrologic alteration. Housing development also appears to have been a contributing factor in extirpation of the Beulah, New Mexico, colony (Scott and Fisher 2014, p. 3). In Colorado, it is possible that Rifle Gap Reservoir and Dam degraded and fragmented habitat, as one butterfly was sighted at a small wetland downstream of the dam and the reservoir flooded and fragmented habitat upstream. Additional habitat alteration upstream and downstream from a variety of factors also has likely fragmented habitat. Many other colonies/populations have development around them that also either directly encroaches on the habitat or likely has caused degradation and fragmentation from homes, roads, hydrologic alteration and habitat conversion.

Agricultural habitat conversion can cause loss or fragmentation of habitat and typically involves mowing native meadows or growing exotic grasses for hay. Although it is unknown if all agricultural conversion has caused habitat to become unsuitable, aerial imagery reveals that agricultural conversion has been extensive within the

silverspot's range. It has likely caused loss of unknown colonies over the last 150 years and has fragmented native habitat, reducing connectivity between colonies and populations. Annual haying may be less detrimental than haying two or three times a summer. A related subspecies in Arizona and New Mexico persisted for many years (Cong *et al.* 2019) even though haying occurs there once a year typically in late August or September (Smith 2019, pers. comm.).

Despite potential compatibility with annually mowing native hay fields, agricultural conversion to unsuitable crops or fragmentation of habitat has been extensive. Furthermore, residential and commercial development, and other development like roads, continues to limit and/or degrade habitat in or adjacent to existing colonies/populations. Habitat loss and fragmentation, therefore, has meaningfully reduced the viability of the subspecies.

#### Hydrologic Alteration

Hydrologic alteration is also a factor influencing the subspecies' viability. Hydrologic alteration can result from a variety of sources, including, but not limited to, diversions for agricultural and domestic use, erosion and stream channel incision caused by livestock grazing, mining, roads, dredging and filling of wetlands, removal of beaver dams, and creation and operation of large human-made dams. For example, the only known colony in the Costilla population has a diversion ditch delimiting its south side that may have reduced the size of colony, and that ditch and other diversions have allowed for extensive agricultural development in the drainage that has altered native habitat and likely dropped the water table in much of the area. The Paradox colony in the Montrose/San Juan population also has had livestock grazing and water diversions occur over the last 30 years, which have degraded the quality of the wet meadow areas and lowered the water table (Ellis and Ireland 2018, pers. observation).

Many drainages in the Sacramento Mountains, where the Mescalero silverspot colony may have occurred (see SSA report), succumbed to incision of streams around 1900, in turn lowering water tables and eliminating wet meadow habitat (Cary 2020b, pers. comm.). Incision of stream channels occurred due to erosion from deforestation, conversion to agricultural and grazing lands, mining, etc. (Cary 2020b, 2020c, pers. comm.). Beavers were also eliminated around 1900 in the Sacramento Mountains (and other parts of the West), which also undoubtedly caused reduction of water tables and elimination of wet meadow habitat suitable for the silverspot and other wetland-dependent species (Cary 2020b, 2020c, pers. comm.). Hydrologic alteration that degrades riparian areas and lowers water tables from natural systems has occurred not only in the Costilla population, Montrose/San Juan population, and Sacramento Mountains, but extensively in the western United States, including much of the silverspot's range. Hydrologic alteration continues to limit suitable habitat and is a major factor influencing the viability of the subspecies.

#### Livestock Grazing

Livestock grazing may cause habitat loss and degradation if excessive, especially in the naturally scarce habitats of the silverspot (Hammond and McCorkle 1983, p. 219) and depending on the timing and intensity. Year-round grazing or heavy summer grazing is typically incompatible with silverspots because livestock graze on the violet leaves, nectar sources, and other vegetation necessary for the butterfly when the larvae and adults need them (Ellis 1999, p. 5). For example, an area adjacent to a known site in the Ouray population has underlying hydrology and soils beneficial for silverspots, but the habitat is unsuitable due primarily to grazing and perhaps to a lesser extent occasional mowing for hay (Service 2021, figure 19). Light or moderate summer grazing (up to 20 or 30 percent vegetative utilization) may be acceptable, but total rest from grazing in the summer is preferred (Arnold 1989, p. 14; Ellis 2020d, pers. comm.).

If one or more kinds of vegetation are too dense, they can prevent the bog violet from persisting and thus cause extirpation of the butterfly. This occurred in the Unaweep Seep colony in the Mesa/Grand population, perhaps primarily as a result of spike rush (*Eleocharis* spp.) invasion of meadows but also seemingly because of grass, sedge, and willow invasion (Arnold 1989, pp. 9, 14; Ellis 1999, pp. 3, 5, 6). It is unknown if this invasion would have occurred without grazing or if long-term grazing was the factor that shifted vegetation. Without occasional reduction or removal, herbaceous or woody vegetation could crowd out violets. Grazing is ongoing in suitable habitat for the subspecies and can limit availability of habitat throughout the range. Although it can be compatible, grazing is expected to continue to be a major factor influencing the subspecies' viability.

#### Genetic Isolation

Isolation can cause detrimental genetic and demographic effects and is a concern for the silverspot's population resiliency as well as redundancy and representation. Genetic isolation within the populations of silverspot analyzed in the SSA report does not currently appear to be an issue but may be in the future, especially if some populations become extirpated, leaving remaining populations even more isolated than in the current condition (Grishin 2020a, pers. comm.). Lower levels of genetic diversity can reduce the capacity of a population to respond to environmental change (i.e., representation) and may lead to reduced population fitness, such as longevity and fecundity (Darvill *et al.* 2006, p. 608). Another silverspot subspecies, *S. n. apacheana*, has low genetic diversity, likely from genetic drift (disappearance of genes as individuals die), as a result of genetic isolation and small population sizes (Britten *et al.* 1994). Genetic exchange between and within populations can alleviate problems with genetic drift and augment populations demographically. In *S. n. apacheana*, routine dispersal distances up to 2.5 mi (3.9 km) were documented, and 26 percent of the recaptured butterflies had emigrated from the

initial patch of capture (Fleishman *et al.* 2002, p. 708). This migration appears to play an important role for *S. n. apacheana* populations both demographically and genetically (Britten *et al.* 2003, p. 232). Consequently, the ability or inability of individuals to migrate between colonies and populations is expected to also be of benefit or detriment, respectively, for silverspot.

Genetic isolation among populations of silverspot suggests reduced population fitness from genetic drift or for other reasons could be of concern in the future (Cong *et al.* 2019). All known silverspot populations are at least 24.5 mi (39 km) from each other and are genetically isolated from each other (Cong *et al.* 2019). Genetic analysis recently revealed that the Grand County colony is genetically similar to the Mesa County colonies and, hence, are part of the same population. Until recently (20–30 years ago), when Unaweep Seep was extant, the Grand County colony and Unaweep Seep colony in Mesa County were just under 20 mi (32 km) apart. Because alleles within genes can remain in the genome for hundreds or thousands of years, 20–30 years is a short time frame for separation of genetically similar colonies. Therefore, based on the latest scientific evidence (Cong *et al.* 2019), populations that are at least 20 miles apart are assumed to be separate populations. Currently, the distance between the two closest populations, which we know are genetically different and represent separate populations, is 24.5 air miles (39 km) (between the Taos and San Miguel/Mora populations in New Mexico). Consequently, and more specifically, the distance where populations of silverspot may not interbreed and thus may not support each other genetically or demographically appears to be somewhere between 20 and 24.5 air miles (32 and 39 km). The minimum distance of 20 mi (32 km), based on findings of Cong *et al.* (2019), was used in our analysis of genetic connectivity (see *Current Condition*, below).

Reasons for isolation, specifically whether from natural fragmentation or human habitat alteration, are not currently known for all colonies. It is also not known how long

single colonies may have been isolated from each other. Like the large Taos colony of silverspot, if an isolated colony has enough area of habitat to support a large population, it may be resilient enough to survive without nearby colonies and thus maintain viability for a long time. However, many of the silverspot populations, whether single-colony or multi-colony metapopulations, have limited amounts of habitat. It is unknown specifically how long it will take for low genetic diversity to become a threat to the silverspot, but isolation of populations indicates that loss of genetic diversity could be a threat at some point, if loss of populations through lack of demographic support does not occur first, and both are cause for concern for the subspecies' viability.

#### Exotic Plant Invasion

The Taos population has experienced some invasion by the exotic Siberian elm (*Ulmus pumila*). Because Siberian elm is widespread in the butterfly's range, we expect Siberian elm to increase if changes in climate reduce snowpack and water levels in the wet meadows of the Taos population (Cary 2020a, pers. comm.) or other populations. Similarly, the extirpated Unaweep Seep colony location was invaded by other exotic species, including Himalayan blackberry (*Rubus armeniacus*) and tree-of-heaven (*Ailanthus altissima*). Although not known to occupy other colonies at present, these plant species could invade other colonies (Plank 2020, pers. comm.). Other exotic woody or herbaceous species (such as Russian olive (*Elaeagnus angustifolia*), tamarisk (*Tamarix* spp.), or leafy spurge (*Euphorbia esula*)) can rapidly take over habitat and could eliminate bog violets and other native plants. However, there is currently little to no data on plants at the colonies (Ellis 1989, pp. 14–15).

Some nonnative thistles, such as Canada thistles (*Cirsium arvense*), occur in or around colonies and can create monocultures that create poor overall habitat conditions for the silverspot and bog violet by replacing native species (Ellis 1989, p. 14; Selby 2007, p. 30). Land managers in the West sometimes control the spread of exotic thistles,



but Canada thistles (as well as native thistle) provide a nectar source for silverspots. Additionally, the adventive (exotic but not well-established) bull thistle (*C. vulgare*) and burdock (*Arctium minus*) can provide nectar sources (Ellis 1989, p. 14). Because silverspots use exotic thistles, aggressive control of them has been advised against (Fisher 2020b, pers. comm.). It does not appear that monocultures of Canada thistle or other exotic vegetation have replaced native vegetation beneficial for the butterfly at observed colonies (Ellis and Ireland 2018, pers. observation), but study of plant composition at all of the colonies is needed to determine levels of exotic plant presence. Exotic plant invasion is currently considered a minor factor because exotic species are not currently known to be significantly influencing the subspecies' viability.

#### Climate Events

Climate events are defined in the SSA as events that would happen within the range of normal variability (i.e., stochastic events). However, they may still cause reduction of habitat and number of butterflies. A record of other *Speyeria* in Utah indicates that too much rain can reduce numbers of butterflies but may be beneficial to violets, which can support greater numbers of butterflies the following year(s) (Myrup 2020b, pers. comm.). Similarly, floods may at least temporarily reduce habitat and vegetation as well as butterfly numbers. For instance, the Lake Fork River in northeast Utah flooded in spring 2019, limiting or causing extirpation of related silverspot butterflies at a known colony in the Uinta Mountains (Ellis *et al.* 2019, pers. observation) that had been there the year before (Myrup 2019, pers. comm.). However, the flood event was not outside the norm for past observed flood events in that drainage. This stochastic event provides an example of normal climate events that can cause reduction in numbers of individual butterflies or temporary extirpation of a colony but are not expected to cause permanent reduction or extirpation. Thus, climate events are not expected to reduce

the subspecies' viability in the long term and are considered as a minor factor influencing the subspecies' viability.

#### Climate Change

The climate within the silverspot's range already appears to be changing as a result of increased greenhouse gas emissions, with earlier springs and warmer temperatures. Average temperatures in Colorado increased in the 30 years prior to 2014 by 2 degrees Fahrenheit (°F) (1.1 degrees Celsius (°C)), and by 2.5 °F (1.4 °C) in the last 50 years (Lukas *et al.* 2014, p. 2). Snowpack, as measured by snow water equivalent, has mostly been below average in Colorado since 2000. The timing of snowmelt and peak runoff has also shifted 1 to 4 weeks earlier in the last 30 years in Colorado. Furthermore, the Palmer Drought Severity Index has shown an increasing trend in soil-moisture drought conditions due to below average precipitation since 2000 and the warming trend (Lukas *et al.* 2014, p. 2). More recent analysis using National Oceanic and Atmospheric Administration (NOAA) temperature data shows that, since 1895, the average temperature in much of the northern half of the silverspot's range has increased by, or more than, 3.6 °F (2 °C), and it is reported that average annual flows in the Colorado River Basin have declined by 20 percent over the past century (Eilperin 2020, entire). However, tree ring and other paleoclimate data indicate that there were more severe and sustained droughts prior to recent climate data (since 1900) (Lukas *et al.* 2014, pp. 2, 3). The butterfly has survived through the more severe past droughts and, despite noted changes in climate over the last 36 years, climate has thus far not been a detectable factor in reduction of the subspecies' viability. Consequently, at the present and for the current condition analysis in the SSA report, climate change is considered a minor factor. However, climate appears to be at the verge of becoming a major factor; see additional discussion of climate change under *Future Condition*, below.

#### Desiccation of Larvae

Desiccation of overwintering larvae may be a stressor if soil moisture and air humidity is too low or if larvae cannot remain hydrated. It is suspected that soil moisture and dead vegetation, along with some air flow, provide suitable conditions that prevent desiccation (Fisher 2020c, pers. comm.). Hydration also appears to be needed prior to first instar larvae overwintering and is achievable if water for drinking is freely available and if soil or air moisture is sufficient for absorption (Myrup 2020a, pers. comm.; Stout 2020, unpaginated). Snow cover may also provide some desiccation prevention and thermal cover, although it may not be a significant factor (Ellis 2020e, pers. comm.). Snow cover may be of benefit during extreme cold (Fisher 2020a, pers. comm.). In general, however, extreme cold in the silverspot's range is preceded by snow; thus, extreme cold may kill some larvae but is likely not a major factor that reduces the subspecies' viability.

### Collecting

Collecting has occurred in silverspot colonies, and it is possible collecting in small colonies could negatively affect population resiliency (Ellis 1989, p. 15; Selby 2007, p. 31). We know of one example of a potential colony extirpation related to over-collection (Scott 2020, pers. comm.). However, collecting is not currently thought to be a significant stressor for silverspot since most colonies occur on private land, colony locations are largely unknown to the public, and current collecting pressure is not thought to be extensive (Ellis 2020f, pers. comm.). In terms of effect on the current condition of the subspecies, collecting is currently considered a minor factor, and efforts should be taken to keep it a minor factor in the future. There is concern with collecting if public land, or even private land, colony locations are revealed in the future, but currently this factor does not appear to be significantly reducing the subspecies' viability. However, losing even one of the remaining populations to collection could have a substantial impact on the subspecies' redundancy and representation. We are concerned with the

potentially detrimental effects to the subspecies from future collection if silverspot locations, especially smaller populations, are made public, which would facilitate increased collection and potentially cause collection to become a major factor affecting the subspecies' viability (see **III. Critical Habitat**, below).

#### Cumulative Effects

By using the SSA framework to guide our analysis of the scientific information documented in the SSA report, we have not only analyzed individual effects of factors on the subspecies, but we have also analyzed their potential cumulative effects. We incorporate the cumulative effects into our SSA analysis when we characterize the current and future condition of the subspecies. To assess the current and future condition of the subspecies, we undertake an iterative analysis that encompasses and incorporates the threats individually and then accumulates and evaluates the effects of all the factors that may be influencing the subspecies, including threats and conservation efforts. Habitat loss and fragmentation, human-caused hydrologic alteration, livestock grazing, genetic isolation, exotic plant invasion, climate change, climate events, larval desiccation, and collecting are all factors that influence or could influence the subspecies' viability. These factors also have the potential to act cumulatively to impact silverspot viability and their cumulative impacts were considered in our characterization of the subspecies' current and future condition in the SSA. Because the SSA framework considers not just the presence of the factors, but to what degree they collectively influence risk to the entire subspecies, our assessment integrates the cumulative effects of factors and replaces a standalone cumulative effects analysis.

#### Beneficial Factors

*Mowing or Haying:* Mowing or haying occasionally or once a year could be beneficial to open the canopy for violets, reduce a buildup of thatch from dead vegetation, and keep woody vegetation from encroaching beyond what is suitable for the

butterfly. Mowing or haying may approximate disturbance that would have occurred historically from native ungulate grazing and/or wildfire. Mowing in the early summer would allow for regrowth of vegetation and nectar sources suitable for the silverspot (Ellis 2020d, pers. comm.). However, mowing once in the late summer or early fall could potentially be compatible (Smith 2019, pers. comm.) but has a higher risk of reducing vegetation and nectar sources for that year's pupae and adults and possibly crushing pupae, eggs, and larvae. Occasional or once-yearly mowing can, nonetheless, be beneficial to reduce competition from other plants if adequate nectar sources remain in the field or if there are enough within a short distance around the field to supply nectar to adult silverspots.

*Grazing:* Winter and spring grazing (October to mid-April) can be beneficial to silverspots (Arnold 1989, pp. 14–15). This is because removal of thatch from the dead vegetation limits competition in the spring for the violets and can reduce woody vegetation so that it does not encroach beyond what is suitable for the butterfly. It also may approximate historical grazing patterns by native ungulates (deer and elk), which come down to lower valleys in the winter where there is less snow. Horses grazed an apparently healthy colony in the spring and summer (Arnold 1989, p. 14), so some light to moderate grazing in the spring or summer may be acceptable. In contrast, grazing when violets have emerged and are actively growing (spring and summer) may be detrimental if livestock readily consume or trample the violets and possibly eggs, larvae, and pupae.

*Burning:* Burning of meadows to reduce dead vegetation and reduce woody vegetation to suitable levels for the butterfly can also be beneficial and can possibly increase violet density (Arnold 1989, p. 14; Ellis 1989, p. 14).

*Exotic Plant Invasion:* Some exotic plants considered invasive or adventive may provide nectar sources that benefit silverspots (Ellis 1989, p. 14; Fisher 2020b, pers.

comm.). However, especially with invasive plants, this may only be the case where native nectar sources have been substantially reduced or eliminated.

*Conservation Efforts:* The historical Unaweep Seep colony in the Mesa/Grand population was designated as a State Natural Area in 1983 (Ellis 1999, p. 2). The Bureau of Land Management (BLM) also established a Research Natural Area around it in 1983 (Ellis 1989, p. 1), and designated it as an Area of Critical Environmental Concern through their 2015 Resource Management Plan (Plank 2017, pers. comm.). Some monitoring, at least for the bog violet, occurred through 1999 (Ellis 1999, entire), but sometime after 1989 or possibly 1999, the colony became extirpated (Ellis 1999, pp. 2, 7). Habitat monitoring actions were recommended, but it is unclear whether any of them were ever implemented (Ellis 1999, pp. 8–9). Although the State of Colorado and the BLM implemented land conservation designations around the Unaweep Seep colony in the Mesa/Grand population, this colony has been extirpated for at least 20 years. Therefore, unless the bog violet and silverspot are translocated back to Unaweep Seep, the land designations do not benefit the silverspot. There are no other State regulatory mechanisms that benefit the butterfly in Colorado, New Mexico, or Utah. The Colorado Wildlife Action Plan (WAP) includes the silverspot butterfly, but there are no State statutes for management of the silverspot, so management would occur through cooperative efforts with other agencies or organizations.

The BLM (Colorado), U.S. Forest Service (USFS) Region 2 (Colorado), and USFS Region 3 (New Mexico) have the butterfly on their sensitive species lists. The USFS Region 4 (Utah) does not, but no silverspots are currently known on USFS land in Utah. No silverspot colonies are currently known on USFS land in Colorado or New Mexico either, but the elevational range of the subspecies includes some lower elevation USFS land. The BLM does not have the silverspot on its sensitive species lists in either Utah or New Mexico. If species are on BLM sensitive species lists, that means that the

BLM works cooperatively with other Federal and State agencies and nongovernmental organizations to conserve these species and ensure that activities on public lands do not contribute to the need for their listing under the Act. Specific conservation objectives for BLM sensitive species are established in BLM land use plans. BLM's Grand Junction Field Office manages the Unaweeep Seep property and mentions management of the area for the butterfly in their 2015 Resource Management Plan (Plank 2017, pers. comm.). The butterfly is not included in other BLM land use plans in any of the other BLM resource areas in Colorado, New Mexico, or Utah since the butterfly was not known to occur on BLM land in other areas until very recently (only one additional colony).

Only three silverspot colonies are known to occur on public land (including State lands), but there is potentially a fourth colony (unconfirmed) on public land based on recent bog violet locations for the Garfield population. Consequently, at present, any regulatory mechanisms or conservation efforts on State, BLM, and USFS lands, although contributing to conservation of silverspots, would have a low impact on the silverspot's overall viability since the majority of populations and colonies are entirely or mostly on private land.

#### *Current Condition*

We assessed current conditions of silverspot populations in relation to the ecological requirements of this subspecies. Measurements available that are consistent across populations are habitat patch size, number of colonies, and approximate distance between colonies within a population from which genetic connectivity can be estimated. Additionally, the presence and potential influence of the three major habitat factors affecting the subspecies (habitat loss and fragmentation, grazing, and hydrologic alteration) were derived from aerial imagery and/or on-the-ground knowledge. Therefore, these metrics are used to characterize the current resiliency condition of populations (see

the SSA report's section 3.5 "Current Condition by Population" on how metric ranks were derived; Service 2021).

Resiliency rankings and categories were established based on best available information and professional opinion of species experts. Habitat patch sizes are estimates based on expert opinion using aerial imagery based on best estimates of individual colony bog violet areas and primary nectar source areas. Determination of the number and status of colonies within a population was primarily based on expert input.

There are 10 populations comprised of 19 colonies of the silverspot butterfly. Two populations, Archuleta and Garfield, were not included in the genetic analysis by Cong *et al.* (2019) due to a lack of samples, but we consider them to be part of the silverspot butterfly subspecies due to their geographic proximity to confirmed populations.

Within the range and among all 10 populations, four known colonies have been extirpated. Three of these extirpations occurred relatively recently (in about the last 30 years) and one, Beulah, perhaps as long ago as 117 years (Scott and Fisher 2014, p. 3). Not including the extirpated colonies or stray sightings, and based on recent surveys or expert input, 19 colonies are considered extant that make up the 10 populations.

Resiliency for each population was scored using metrics for population size (in acres), number of colonies within populations, connectivity within populations, and habitat condition. Resiliency scores are categorized as follows: 0's; predicted extirpation (future scenarios only); 1's: very low resiliency; 2's and 3's: low resiliency; 4's to 6's: moderate resiliency; 7's and above: high resiliency (Table 1). According to our current condition analysis in the SSA report, five populations have very low resiliency. One population has low resiliency, two populations have moderate resiliency, and two populations have high resiliency (Table 1).

Table 1. Current condition resiliency rankings for silverspot populations.



Population	Size in ac (ha)	Number of Colonies	Population Resiliency Score
Archuleta	11.9 (4.8)	1	1
Conejos	39.2 (15.9)	1	3
Costilla	4.3 (1.7)	1	1
Garfield	1.0 (.4)	1	1
La Plata	5.2 (2.1)	1	1
Mesa/Grand	66.4 (26.9)	6	9
Montrose/San Juan	1.0 (.4)	2	4
Ouray	59.3 (24)	3	6
San Miguel/Mora	1.0 (.4)	1	1
Taos	521.2 (210.9)	2	8

With 10 populations spread across 284 air miles (457 km) north to south and 237 air miles (381 km) east to west, there appears to be adequate redundancy should catastrophic events occur that cause extirpation of one or a few populations. However, if catastrophic events cause extirpation of the populations with the highest resiliency (Mesa/Grand, Taos, and Ouray), it could be quite detrimental to the viability of the subspecies because six of the remaining populations have very low or low resiliency. Due to the uncertainty as to whether all populations are truly extant, and due to low resiliency of many populations, more populations with sufficient resiliency would contribute to the subspecies' viability. However, assuming all populations are still extant, we consider the current condition of the subspecies' redundancy to be moderate.

Eight silverspot butterfly populations were identified based on genetic differentiation (Cong *et al.* 2019, entire). The other two populations were designated as such because they are more than 20 air miles (32 km) away from other populations (41 and 80 mi (66 and 129 km)) and it is likely populations more than 20 mi (32 km) apart are not genetically connected (Ellis 2020c, pers. comm.; Grishin 2020b, pers. comm.). It is likely these genetic differences provide some adaptability, or representation. However, since many of the populations are comprised of a single colony and all populations appear isolated from one another, genetic drift could be causing limited genetic diversity, which is a concern for the subspecies. The 10 silverspot populations capture the genetic

and ecological variation currently known for this subspecies. In general, the bog violet and butterfly occur in the same habitat across the range, but ecological representation adds to adaptive capacity since the silverspot occurs at different elevations, so that overall, the silverpot has low to moderate representation. Future analysis of ecological settings at all colonies/populations is needed to improve our understanding of representation across the subspecies' range.

In summary, there are currently 19 colonies representing the 10 populations that are considered extant. In terms of resiliency, five populations are in very low condition, one in low condition, two in moderate condition, and two in high condition. Current redundancy is determined to be moderate, and representation is thought to be low to moderate.

#### *Future Condition*

In the SSA report, we forecast the resiliency of silverspot populations and the redundancy and representation of the subspecies over the next 30 years (to the year 2050) using a range of plausible future scenarios. We selected 30 years because climate model projections are relatively similar up to this point. Also, climate change impacts and human habitat impacts are likely to be the biggest drivers of changes to resiliency, redundancy, and representation for this subspecies. We used future climate projections developed for southern Colorado and northern New Mexico (Rangwala 2020a, 2020b). Four climate models captured the range of model projections; thus, we evaluate four future scenarios that capture the range of plausible futures. Three of the four models use representative concentration pathway (RCP; a greenhouse gas concentration trajectory) 4.5 and the fourth uses RCP8.5. RCP4.5 is considered a medium emissions scenario. RCP8.5 is considered a high emissions scenario. The higher the emissions, the greater chance the climate will change further from the 1971–2000 baseline. Current policies are projected to take us slightly above the RCP4.5 emission trends by mid-century

(Hausfather and Peters 2020, p. 260). The climate models are presented in tables 5 and 6 in the SSA report (Service 2021).

Using the four climate scenarios, we developed four future condition scenarios to evaluate the future viability of the subspecies. In simple terms, the four scenarios include:

Scenario 1: Warm Climate with Conservation Efforts

Scenario 2: Hot and Dry Summers/Very Wet Winters with Conservation Efforts

Scenario 3: Very Hot and Very Dry Summers/Wet Winters with No Conservation Efforts

Scenario 4: Hot and Very Dry Summers/Dry Winters with No Conservation Efforts

In addition to the effects of climate change, we also considered effects of human-caused impacts. In evaluating the effects of scenarios on silverspot populations, if available information indicated hydrology of colonies/populations will be impacted by human activity a negative habitat factor rank was applied to future resiliency scores (Service 2021, p. 46).

Because Scenarios 1 and 2 considered potential future conservation efforts, which are not certain to occur and are not formalized in any conservation agreements, we did not consider these scenarios when determining if the silverspot meets the Act's definition of an endangered species or of a threatened species. However, scenarios 1 and 2 will inform our strategies for recovery of the species. Therefore, our analysis in this proposed rule focuses on the future condition of the silverspot under scenarios 3 and 4, as summarized below. Refer to the SSA report for full descriptions of the future scenarios (Service 2021, chapter 4).

#### Scenario 3

Scenario 3 is characterized as follows:

- Some increase in direct habitat loss due to development occurs, particularly in colonies close to existing housing development.
- Habitat fragmentation due to agricultural conversion is not reduced.

- Light to heavy summer grazing occurs.
- No efforts are made to maintain current hydrology.
- All populations will have a negative habitat factor rank due to climate-related hydrologic alteration whether there is surrounding development or not.
- No translocations of butterflies are implemented, and genetic diversity remains in a likely low state.
- Climate emissions follow RCP8.5.

#### Scenario 4

Scenario 4 is characterized as follows:

- Some increase in direct habitat loss due to development occurs, particularly in colonies close to existing housing development.
- Habitat fragmentation due to agricultural conversion is not reduced.
- Light to heavy summer grazing occurs.
- No efforts are made to maintain current hydrology (but even if so, those efforts are ineffective in the face of extreme drought).
- All populations will have a negative habitat factor rank due to climate-related hydrologic factors regardless of absence of nearby development or agricultural activity or existing development and no conservation efforts.
- No translocations of butterflies are implemented, and genetic diversity remains in a likely low state.
- Climate emissions follow RCP4.5.

#### Results of Scenarios 3 and 4

Resiliency rankings for each population under Scenario 3 can be found in the SSA report (Service 2021, table 11; Table 2 below). Five of the previously ranked low or very low resiliency populations under current conditions are expected to become extirpated, one population has a very low resiliency, three are low resiliency, and the Ouray

population retains a moderate resiliency passing the Mesa/Grand and Taos populations as the highest-ranking population. Extirpation of colonies will reduce resiliency and redundancy of populations, and will also undoubtedly decrease representation from the current condition, causing a decline in subspecies' viability compared to the current condition.

Resiliency rankings for each population under Scenario 4 can be found in the SSA report (Service 2021, table 12). As in Scenario 3, it is expected that climate change will cause extirpation of all small colonies/populations under 12 ac (5 ha). The size of habitat in remaining populations increases very slightly in Colorado populations compared to Scenario 3. Habitat decreases in the Taos population from Scenario 3 but not enough to change the size ranking. With there being slightly less evaporative stress and slightly less frequency of severe drought under Scenario 4 compared to Scenario 3, remaining populations may, in turn, be slightly more resilient. However, using the resiliency ranking metrics in the SSA report, the increase in resiliency in Scenario 4, compared to Scenario 3, is not sufficient to change the ranking of these populations. Consequently, resiliency rankings are the same as those in Scenario 3, with five extirpated populations, one very low and three low resiliency populations, and only one moderately resilient population. Redundancy of populations also remains low, and representation is also decreased from the current condition.

#### Summary of Current and Future Conditions

A comparison of the resiliency of each population for the current condition and future scenarios is presented below in Table 2 along with summaries of redundancy and representation (also Service 2021, table 13). Currently, we have determined that five of the 10 extant populations of silverspot are in a very low resiliency condition, one is low resiliency, two are moderate resiliency, and two of the largest populations are in high resiliency condition. With 10 populations spread across the subspecies' range, there

appears to be adequate redundancy should catastrophic events occur that cause extirpation of one or a few populations, and we consider current redundancy to be moderate for the silverspot. It is likely there is representation of adaptability due to the genetic differences observed among populations. However, many of the populations are composed of a single colony, and all populations appear isolated genetically. In general, the bog violet and butterfly occur in the same habitat across the subspecies' range, but ecological representation adding to adaptive capacity through occurrence at different elevations gives a low-to-moderate subspecies representation currently.

Climate is predicted to change significantly over the next 30 years in scenarios 3 and 4, resulting in conditions that cause resiliency, redundancy, representation to decrease, and thus the subspecies' viability is expected to decrease from the current condition. Resiliency rankings are the same for scenarios 3 and 4 with five extirpated populations, one very low and three low resiliency populations, and only one moderately resilient population. Redundancy of populations and representation are both reduced from the current condition.

Table 2. Summary of silverspot resiliency, redundancy, and representation for current condition and four future scenarios.

Population	Current Condition Resiliency	Future Scenario 3 Resiliency	Future Scenario 4 Resiliency
Archuleta	1	0	0
Conejos	3	2	2
Costilla	1	0	0
Garfield	1	0	0
La Plata	1	0	0
Mesa/Grand	9	3	3
Montrose/San Juan	4	1	1
Ouray	6	5	5
San Miguel/Mora	1	0	0
Taos	8	3	3
Redundancy	Moderate	Very Low	Very Low
Representation	Low-Moderate	Low	Low

## **Determination of Silverspot's Status**

Under the Act, the term “species” includes any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature (16 U.S.C. 1532(16)). Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations (50 CFR part 424) set forth the procedures for determining whether a species meets the definition of an endangered species or a threatened species. The Act defines an “endangered species” as a species in danger of extinction throughout all or a significant portion of its range, and a “threatened species” as a species likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The Act requires that we determine whether a species meets the definition of endangered species or threatened species because of any of the following factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence.

### *Status Throughout All of Its Range*

We have carefully assessed the best scientific and commercial information available regarding the past, present, and future threats to the silverspot butterfly across its range in the United States. We found habitat loss and fragmentation (Factor A), incompatible livestock grazing (Factor A), human-caused hydrologic alteration (Factor A), and genetic isolation (Factor E) to be the main drivers of the subspecies' current condition, with the addition of the effects of climate change (Factor E) influencing future condition. These stressors all contribute to loss of habitat quantity and quality for the silverspot and for the bog violet, the plant on which silverspot larvae exclusively feed. These threats can currently occur anywhere in the range of the silverspot, and future

effects of climate change are expected to be ubiquitous throughout the subspecies' range. The existing regulatory mechanisms (Factor D) do not significantly affect the subspecies or ameliorate these stressors; thus, these stressors continue and are predicted to increase in prevalence in the future.

Under the two future scenarios considered in this evaluation, we expect some populations to become extirpated and resiliency of the remaining populations to decrease. This would result in decreased redundancy and representation in the future compared to the current condition.

We find that the silverspot is not currently in danger of extinction because the subspecies is still widespread with multiple populations of various sizes and resiliency spread across its range, capturing known genetic and ecological variation. Therefore, the subspecies currently has sufficient redundancy and representation to withstand catastrophic events and maintain adaptability to changes. However, we expect that the stressors, individually and cumulatively, will reduce resiliency, redundancy, and representation within all parts of the range within the foreseeable future in light of future climate change effects.

After evaluating threats to the subspecies and assessing the cumulative effect of the threats under the section 4(a)(1) factors, we find that the silverspot is likely to become endangered throughout all of its range within the foreseeable future. This finding is based on anticipated reductions in resiliency, redundancy, and representation in the future as a result of predicted loss and degradation of wet meadow habitat from the synergistic and cumulative interactions between climate change and other stressors. Climate change is predicted to increase temperatures and decrease water availability and snowpack necessary to maintain the wet meadows that the silverspot and bog violet need. This, coupled with the continuation of other stressors that alter hydrology and cause habitat loss and fragmentation, is expected to impact the future viability of this subspecies. We



can reasonably determine that both the future threats and the subspecies' responses to those threats are likely within a 30-year timeframe (i.e., the foreseeable future). Thus, after assessing the best available information, we determine that the silverspot is not currently in danger of extinction but is likely to become in danger of extinction within the foreseeable future throughout all of its range.

#### *Status Throughout a Significant Portion of Its Range*

Under the Act and our implementing regulations, a species may warrant listing if it is in danger of extinction or likely to become so in the foreseeable future throughout all or a significant portion of its range. The court in *Center for Biological Diversity v. Everson*, 2020 WL 437289 (D.D.C. Jan. 28, 2020) (*Center for Biological Diversity*), vacated the aspect of the Final Policy on Interpretation of the Phrase “Significant Portion of Its Range” in the Endangered Species Act’s Definitions of “Endangered Species” and “Threatened Species” (79 FR 37578; July 1, 2014) that provided that the Service does not undertake an analysis of significant portions of a species’ range if the species warrants listing as threatened throughout all of its range. Therefore, we proceed to evaluating whether the species is endangered in a significant portion of its range—that is, whether there is any portion of the species’ range for which both (1) the portion is significant; and (2) the species is in danger of extinction in that portion. Depending on the case, it might be more efficient for us to address the “significance” question or the “status” question first. We can choose to address either question first. Regardless of which question we address first, if we reach a negative answer with respect to the first question that we address, we do not need to evaluate the other question for that portion of the species’ range.

Following the court’s holding in *Center for Biological Diversity*, we now consider whether there are any significant portions of the species’ range where the species is in danger of extinction now (i.e., endangered). In undertaking this analysis for the

silverspot, we choose to address the status question first—we consider information pertaining to the geographic distribution of both the subspecies and the threats that the subspecies faces to identify any portions of the range where the subspecies is endangered.

For the silverspot, we considered whether the threats are geographically concentrated in any portion of the subspecies' range at a biologically meaningful scale. We examined the following threats: Habitat loss and fragmentation; livestock grazing; human-caused hydrologic alteration; genetic isolation; climate change; climate events; invasion by nonnative plants; larval desiccation; and collecting. These are all factors that influence or could influence the subspecies' viability, including cumulative effects. All of these threats are similar in scope, scale, and distribution across the range of the subspecies. The spatial distribution of these threats is evenly distributed throughout the range and not concentrated in any particular area. However, there are a number of smaller populations distributed throughout the range that are currently in low resiliency condition and therefore could experience an elevated risk of extinction in the future (see Tables 1 and 2). However, these smaller populations are not concentrated in their location and are not at risk of extinction currently, as described in our analysis above. Rather their risk of extinction is influenced by the predicted future effects of habitat loss and degradation, climate change, and to a lesser extent the other stressors analyzed in this rule. Thus, there are no portions of the subspecies' range where the subspecies has a different status from its rangewide status. Therefore, no portion of the subspecies' range provides a basis for determining that the subspecies is in danger of extinction in a significant portion of its range, and we determine that the subspecies is likely to become in danger of extinction within the foreseeable future throughout all of its range. This is consistent with the courts' holdings in *Desert Survivors v. Department of the Interior*, No. 16-cv-01165-JCS, 2018 WL 4053447 (N.D. Cal. Aug. 24, 2018), and *Center for Biological Diversity v. Jewell*, 248 F. Supp. 3d, 946, 959 (D. Ariz. 2017).

### *Determination of Status*

Our review of the best available scientific and commercial information indicates that the silverspot meets the Act's definition of a threatened species. Therefore, we propose to list the silverspot as a threatened species in accordance with sections 3(20) and 4(a)(1) of the Act.

### **Available Conservation Measures**

Conservation measures provided to species listed as endangered or threatened species under the Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing results in public awareness, and conservation by Federal, State, Tribal, and local agencies, private organizations, and individuals. The Act encourages cooperation with the States and other countries and calls for recovery actions to be carried out for listed species. The protection required by Federal agencies and the prohibitions against certain activities are discussed, in part, below.

The primary purpose of the Act is the conservation of endangered and threatened species and the ecosystems upon which they depend. The ultimate goal of such conservation efforts is the recovery of these listed species, so that they no longer need the protective measures of the Act. Section 4(f) of the Act calls for the Service to develop and implement recovery plans for the conservation of endangered and threatened species. The recovery planning process involves the identification of actions that are necessary to halt or reverse the species' decline by addressing the threats to its survival and recovery. The goal of this process is to restore listed species to a point where they are secure, self-sustaining, and functioning components of their ecosystems.

Recovery planning consists of preparing draft and final recovery plans, beginning with the development of a recovery outline and making it available to the public within 30 days of a final listing determination. The recovery outline guides the immediate

implementation of urgent recovery actions and describes the process to be used to develop a recovery plan. Revisions of the plan may be done to address continuing or new threats to the species, as new substantive information becomes available. The recovery plan also identifies recovery criteria for review of when a species may be ready for reclassification from endangered to threatened (“downlisting”) or removal from protected status (“delisting”), and methods for monitoring recovery progress. Recovery plans also establish a framework for agencies to coordinate their recovery efforts and provide estimates of the cost of implementing recovery tasks. Recovery teams (composed of species experts, Federal and State agencies, nongovernmental organizations, and stakeholders) are often established to develop recovery plans. When completed, the recovery outline, draft recovery plan, and the final recovery plan will be available on our website (<https://www.fws.gov/endangered>), or from our Western Colorado Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Implementation of recovery actions generally requires the participation of a broad range of partners, including other Federal agencies, States, Tribes, nongovernmental organizations, businesses, and private landowners. Examples of recovery actions include habitat restoration (e.g., restoration of native vegetation), research, captive propagation and reintroduction, and outreach and education. The recovery of many listed species cannot be accomplished solely on Federal lands because their range may occur primarily or solely on non-Federal lands. To achieve recovery of these species requires cooperative conservation efforts on private, State, and Tribal lands.

If this species is listed, funding for recovery actions will be available from a variety of sources, including Federal budgets, State programs, and cost-share grants for non-Federal landowners, the academic community, and nongovernmental organizations. In addition, pursuant to section 6 of the Act, the States of Colorado, New Mexico, and Utah would be eligible for Federal funds to implement management actions that promote

the protection or recovery of the silverspot. Information on our grant programs that are available to aid species recovery can be found at: <https://www.fws.gov/grants>.

Although the silverspot is only proposed for listing under the Act at this time, please let us know if you are interested in participating in recovery efforts for this subspecies. Additionally, we invite you to submit any new information on this subspecies whenever it becomes available and any information you may have for recovery planning purposes (see **FOR FURTHER INFORMATION CONTACT**).

Section 7(a) of the Act requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as an endangered or threatened species and with respect to its critical habitat, if any is designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(4) of the Act requires Federal agencies to confer with the Service on any action that is likely to jeopardize the continued existence of a species proposed for listing or result in destruction or adverse modification of proposed critical habitat. If a species is listed subsequently, section 7(a)(2) of the Act requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of the species or destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into consultation with the Service.

Federal agency actions within the subspecies' habitat that may require conference or consultation or both as described in the preceding paragraph include management and any other landscape-altering activities on Federal lands administered by the U.S. Fish and Wildlife Service, Bureau of Land Management, Bureau of Indian Affairs, Bureau of Reclamation, National Park Service, and U.S. Forest Service; issuance of section 404 Clean Water Act (33 U.S.C. 1251 *et seq.*) permits by the U.S. Army Corps of Engineers; Natural Resources Conservation Service land management actions with private

landowners and other Federal or State agencies; construction, maintenance, and funding of Federal or State roads or highways by the Federal Highway Administration; and possibly land management or other activities by other Federal agencies (such as the Office of Surface Mining, Reclamation, and Enforcement; Federal Energy Regulatory Commission; Western Area Power Administration; Federal Aviation Administration; Federal Communication Commission; Federal Emergency Management Agency; Environmental Protection Agency, and Animal and Plant Health Inspection Service).

It is our policy, as published in the *Federal Register* on July 1, 1994 (59 FR 34272), to identify to the maximum extent practicable at the time a species is listed, those activities that would or would not constitute a violation of section 9 of the Act. The intent of this policy is to increase public awareness of the effect of a proposed listing on proposed and ongoing activities within the range of the species proposed for listing. The discussion below regarding protective regulations under section 4(d) of the Act complies with our policy.

## **II. Proposed Rule Issued Under Section 4(d) of the Act**

### **Background**

Section 4(d) of the Act contains two sentences. The first sentence states that the Secretary shall issue such regulations as she deems necessary and advisable to provide for the conservation of species listed as threatened. The U.S. Supreme Court has noted that statutory language like “necessary and advisable” demonstrates a large degree of deference to the agency (see *Webster v. Doe*, 486 U.S. 592 (1988)). Conservation is defined in the Act to mean the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary. Additionally, the second sentence of section 4(d) of the Act states that the Secretary may by regulation prohibit with respect to any threatened species any act prohibited under section 9(a)(1), in the case of fish or

wildlife, or section 9(a)(2), in the case of plants. Thus, the combination of the two sentences of section 4(d) provides the Secretary with wide latitude of discretion to select and promulgate appropriate regulations tailored to the specific conservation needs of the threatened species. The second sentence grants particularly broad discretion to the Service when adopting the prohibitions under section 9.

The courts have recognized the extent of the Secretary's discretion under this standard to develop rules that are appropriate for the conservation of a species. For example, courts have upheld rules developed under section 4(d) as a valid exercise of agency authority where they prohibited take of threatened wildlife, or include a limited taking prohibition (see *Alsea Valley Alliance v. Lautenbacher*, 2007 U.S. Dist. Lexis 60203 (D. Or. 2007); *Washington Environmental Council v. National Marine Fisheries Service*, 2002 U.S. Dist. Lexis 5432 (W.D. Wash. 2002)). Courts have also upheld 4(d) rules that do not address all of the threats a species faces (see *State of Louisiana v. Verity*, 853 F.2d 322 (5th Cir. 1988)). As noted in the legislative history when the Act was initially enacted, "once an animal is on the threatened list, the Secretary has an almost infinite number of options available to him [or her] with regard to the permitted activities for those species. He [or she] may, for example, permit taking, but not importation of such species, or he [or she] may choose to forbid both taking and importation but allow the transportation of such species" (H.R. Rep. No. 412, 93rd Cong., 1st Sess. 1973).

Exercising this authority under section 4(d), we have developed a proposed rule that is designed to address the silverspot's specific threats and conservation needs. Although the statute does not require us to make a "necessary and advisable" finding with respect to the adoption of specific prohibitions under section 9, we find that this rule as a whole satisfies the requirement in section 4(d) of the Act to issue regulations deemed necessary and advisable to provide for the conservation of the silverspot. As discussed above under **Summary of Biological Status and Threats**, we have concluded that the

silverspot is likely to become in danger of extinction within the foreseeable future primarily due to the projected effects of climate change, habitat loss and fragmentation, incompatible livestock grazing, human-caused hydrologic alteration, and genetic isolation. The provisions of this proposed 4(d) rule would promote conservation of the silverspot by encouraging management of the landscape in ways that meet both land management considerations and the conservation needs of the silverspot. The provisions of this proposed rule are one of many tools that we would use to promote the conservation of the silverspot. This proposed 4(d) rule would apply only if and when we make final the listing of the silverspot as a threatened species.

Section 7(a)(2) of the Act requires Federal agencies, including the Service, to ensure that any action they fund, authorize, or carry out is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of designated critical habitat of such species. In addition, section 7(a)(4) of the Act requires Federal agencies to confer with the Service on any agency action which is likely to jeopardize the continued existence of any species proposed to be listed under the Act or result in the destruction or adverse modification of proposed critical habitat.

If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency (action agency) must enter into consultation with us. Examples of actions that are subject to the section 7 consultation process are actions on State, Tribal, local, or private lands that require a Federal permit (such as a permit from the U.S. Army Corps of Engineers under section 404 of the Clean Water Act (33 U.S.C. 1251 *et seq.*) or a permit from the Service under section 10 of the Act) or that involve some other Federal action (such as funding from the Federal Highway Administration, Federal Aviation Administration, or the Federal Emergency Management Agency). Federal actions not affecting listed species or critical habitat—and actions on State, Tribal, local, or private



lands that are not federally funded, authorized, or carried out by a Federal agency—do not require section 7 consultation.

This obligation does not change in any way for a threatened species with a species-specific 4(d) rule. Actions that result in a determination by a Federal agency of “not likely to adversely affect” continue to require the Service’s written concurrence and actions that are “likely to adversely affect” a species require formal consultation and the formulation of a biological opinion.

### **Provisions of the Proposed 4(d) Rule**

This proposed 4(d) rule would provide for the conservation of the silverspot by prohibiting the following activities, with certain exceptions (discussed below): Importing or exporting; possession and other acts with unlawfully taken specimens; delivering, receiving, transporting, or shipping in interstate or foreign commerce in the course of commercial activity; and selling or offering for sale in interstate or foreign commerce. In addition, anyone taking, attempting to take, or otherwise possessing a silverspot, or parts thereof, in violation of section 9 of the Act would be subject to a penalty under section 11 of the Act, with certain exceptions (discussed below).

Under the Act, “take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Some of these provisions have been further defined in regulations at 50 CFR 17.3. Take can result knowingly or otherwise, by direct and indirect impacts, intentionally or incidentally. Allowing incidental and intentional take in certain cases, such as for the purposes of scientific inquiry or monitoring, or to improve habitat availability and quality, would help preserve the silverspot’s remaining populations, slow their rate of decline, and decrease synergistic, negative effects from other stressors.

We may issue permits to carry out otherwise prohibited activities, including those described above, involving threatened wildlife under certain circumstances. Regulations

governing permits are codified at 50 CFR 17.32. With regard to threatened wildlife, a permit may be issued for the following purposes: For scientific purposes, to enhance propagation or survival, for economic hardship, for zoological exhibition, for educational purposes, for incidental taking, or for special purposes consistent with the purposes of the Act. The statute also contains certain exemptions from the prohibitions, which are found in sections 9 and 10 of the Act.

We recognize the special and unique relationship with our State natural resource agency partners in contributing to conservation of listed species. State agencies often possess scientific data and valuable expertise on the status and distribution of endangered, threatened, and candidate species of wildlife and plants. State agencies, because of their authorities and their close working relationships with local governments and landowners, are in a unique position to assist us in implementing all aspects of the Act. In this regard, section 6 of the Act provides that we shall cooperate to the maximum extent practicable with the States in carrying out programs authorized by the Act. Therefore, any qualified employee or agent of a State conservation agency that is a party to a cooperative agreement with us in accordance with section 6(c) of the Act, who is designated by his or her agency for such purposes, would be able to conduct activities designed to conserve the silverspot that may result in otherwise prohibited take without additional authorization.

As discussed above under *Factors Influencing Subspecies Viability*, incompatible livestock grazing, exotic plant invasion, prescribed burning, and use of pesticides affect the status of the silverspot both negatively and positively depending on how, when, and where they are done. Accordingly, this proposed 4(d) rule addresses activities to facilitate conservation and management of the silverspot where they currently occur and may occur in the future by excepting them from the Act's take prohibition under certain specific conditions. These activities are intended to increase management flexibility and

encourage support for the conservation and habitat improvement of the silverspot. Under this proposed 4(d) rule, take would be prohibited, except for take incidental to an otherwise lawful activity caused by actions described in the exceptions to prohibitions in the proposed 4(d) rule for the purpose of silverspot conservation or recovery.

The proposed forms of allowable take are explained in more detail below. For all proposed forms of allowable take, reasonable care would have to be practiced to minimize the impacts from the actions. Reasonable care means limiting the impacts to the silverspot and its host plant (bog violet) by complying with all applicable Federal, State, and Tribal regulations for the activity in question; using methods and techniques that result in the least harm, injury, or death, as feasible; undertaking activities at the least impactful times (e.g., conducting activities that might impact habitat during the flight season) and locations, as feasible; ensuring the number of individuals affected does not impact the existing populations; ensuring no introduction of invasive plant species; and preserving the genetic diversity of populations.

Under the proposed 4(d) rule, incidental take of a silverspot butterfly would not be a violation of section 9 of the Act if it occurs as a result of the following activities. All activities and statements below only apply to habitat areas of silverspot that include wet meadow areas where bog violet are growing and immediately adjacent areas with nectar sources.

#### *Livestock Grazing*

By excepting take of silverspot caused by grazing, we would acknowledge the positive role that some ranchers have already played in conserving the silverspot butterfly and the importance of preventing any additional loss and fragmentation of native grasslands and riparian habitat. Grazing may be an effective tool to improve silverspot habitat by opening up the habitat and reducing vegetation that competes with bog violet when carefully applied in cooperation and consultation with private landowners, public

land managers, and grazing experts. Moderate vegetative utilization (40–55 percent) in late fall to early spring (October 15 to May 31) would be excepted under this proposed 4(d) rule. Resting pastures that include silverspot habitat is preferred in summer through fall (June 1 to October 14), but light grazing (less than 30 percent utilization) during this time frame would also be excepted from take by reducing competition with the bog violet. Recovery of the silverspot will depend on the protection and restoration of high-quality habitats supporting the bog violet on private lands and on public lands that are grazed by private individuals under lease or other agreements.

#### *Annual Haying or Mowing*

Annual haying or mowing in early summer can be beneficial, or at least not detrimental, to silverspots by removing vegetation that competes with the bog violet. Therefore, we are proposing to except take from annual haying or mowing in silverspot habitat under the following conditions: activities must occur in the early summer (June 30 or earlier), and blade height would need to be a minimum of 6 inches, with 8 inches or higher preferred in areas with bog violet to avoid cutting the violet leaves. The timing of cutting also applies to surrounding drier areas important for nectaring, but blade height could be lower than 6 inches where the violet is not present. However, haying or mowing from July 1 through October would be detrimental due to removal of nectar sources and cover for all silverspot life stages, and therefore would not be excepted from the prohibitions in the proposed 4(d) rule in and adjacent to bog violet habitat.

#### *Prescribed Burning*

Spring burning can be beneficial to remove thatch that may reduce or prevent growth of the bog violet. Prescribed burning in the spring (March 1 to April 30) has limited impact to silverspots and would be excepted from take. Fall burning (October 15 to December 15) would also be excepted if the silverspot butterfly has been shown to not

be present in a given year through adequate monitoring (i.e., multiple surveys at times when butterflies are active).

### *Brush Control*

Some woody vegetation interspersed in silverspot habitat or at the margins of habitat can be beneficial. However, if allowed to become too dense, woody vegetation can crowd out bog violets and nectar sources. Consequently, brush removal every 4 to 5 years would be excepted from take. Removal can be by mechanical means, burning, grazing, or herbicide application if in compliance with other excepted activities in the proposed 4(d) rule. If mechanical means such as a brush hog is used, the blade would need to be set to 8 inches or higher. If herbicides are used, an appropriate systemic herbicide to prevent regrowth would need to be applied to cut stems. Broadcast spraying in silverspot habitat would be prohibited because it may remove all nectar sources for the butterfly.

### *Noxious Weed Control*

Although some noxious weeds like Canada thistle may provide nectar sources for silverspot, spot spraying, hand pulling, or mowing of noxious weeds would be excepted from take. High densities of noxious weeds can be detrimental to the bog violet and their control can benefit the silverspot. However, broadcast spraying in silverspot habitat would be prohibited because it may remove all nectar sources for the butterfly.

### *Fence Maintenance*

Proposed excepted activities related to fence maintenance include replacement of poles and wire, and aboveground removal of woody vegetation along fence lines. Fences help manage where cattle can graze and reduce unwanted impacts to bog violet habitat. Removal of woody vegetation can prevent encroachment of vegetation into bog violet habitat and reduces competition with bog violet. If removal of woody vegetation is done by machine, such as a brush hog, the machine blade would need to be set 8 inches or

higher above ground to avoid or minimize damage to the butterfly's host plant (bog violet). We recommend a systemic herbicide applied to the cut stems of woody vegetation.

### *Maintenance of Other Structures*

Maintenance of other existing structures within and immediately adjacent to silverspot habitat would be excepted if activities are kept within the confines of already disturbed ground so as to not disturb the subspecies or its habitat.

Nothing in this proposed 4(d) rule would change in any way the recovery planning provisions of section 4(f) of the Act, the consultation requirements under section 7 of the Act, or our ability to enter into partnerships for the management and protection of the silverspot. However, interagency cooperation may be further streamlined through planned programmatic consultations for the subspecies between us and other Federal agencies, where appropriate. We ask the public, particularly State agencies and other interested stakeholders that may be affected by the proposed 4(d) rule, to provide comments and suggestions regarding additional guidance and methods that the Service could provide or use, respectively, to streamline the implementation of this proposed 4(d) rule (see **Information Requested**, above).

## **III. Critical Habitat**

### **Background**

Critical habitat is defined in section 3 of the Act as:

(1) The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the Act, on which are found those physical or biological features

(a) Essential to the conservation of the species, and

(b) Which may require special management considerations or protection; and

(2) Specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

Our regulations at 50 CFR 424.02 define the geographical area occupied by the species as an area that may generally be delineated around species' occurrences, as determined by the Secretary (i.e., range). Such areas may include those areas used throughout all or part of the species' life cycle, even if not used on a regular basis (e.g., migratory corridors, seasonal habitats, and habitats used periodically, but not solely by vagrant individuals). Additionally, our regulations at 50 CFR 424.02 define the word "habitat," for the purposes of designating critical habitat only, as the abiotic and biotic setting that currently or periodically contains the resources and conditions necessary to support one or more life processes of a species.

Conservation, as defined under section 3 of the Act, means to use and the use of all methods and procedures that are necessary to bring an endangered or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and, in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regulated taking.

Critical habitat receives protection under section 7 of the Act through the requirement that Federal agencies ensure, in consultation with the Service, that any action they authorize, fund, or carry out is not likely to result in the destruction or adverse modification of critical habitat. The designation of critical habitat does not affect land ownership or establish a refuge, wilderness, reserve, preserve, or other conservation area. Designation also does not allow the government or public to access private lands. Such

designation does not require implementation of restoration, recovery, or enhancement measures by non-Federal landowners. Where a landowner requests Federal agency funding or authorization for an action that may affect a listed species or critical habitat, the Federal agency would be required to consult with the Service under section 7(a)(2) of the Act. However, even if the Service were to conclude that the proposed activity would result in destruction or adverse modification of the critical habitat, the Federal action agency and the landowner are not required to abandon the proposed activity, or to restore or recover the species; instead, they must implement “reasonable and prudent alternatives” to avoid destruction or adverse modification of critical habitat.

Under the first prong of the Act’s definition of critical habitat, areas within the geographical area occupied by the species at the time it was listed are included in a critical habitat designation if they contain physical or biological features (1) which are essential to the conservation of the species and (2) which may require special management considerations or protection. For these areas, critical habitat designations identify, to the extent known using the best scientific and commercial data available, those physical or biological features that are essential to the conservation of the species (such as space, food, cover, and protected habitat). In identifying those physical or biological features that occur in specific occupied areas, we focus on the specific features that are essential to support the life-history needs of the species, including, but not limited to, water characteristics, soil type, geological features, prey, vegetation, symbiotic species, or other features. A feature may be a single habitat characteristic or a more complex combination of habitat characteristics. Features may include habitat characteristics that support ephemeral or dynamic habitat conditions. Features may also be expressed in terms relating to principles of conservation biology, such as patch size, distribution distances, and connectivity.



Under the second prong of the Act's definition of critical habitat, we can designate critical habitat in areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. The implementing regulations at 50 CFR 424.12(b)(2) further delineate unoccupied critical habitat by setting out three specific parameters: (1) When designating critical habitat, the Secretary will first evaluate areas occupied by the species; (2) the Secretary will consider unoccupied areas to be essential only where a critical habitat designation limited to geographical areas occupied by the species would be inadequate to ensure the conservation of the species; and (3) for an unoccupied area to be considered essential, the Secretary must determine that there is a reasonable certainty both that the area will contribute to the conservation of the species and that the area contains one or more of those physical or biological features essential to the conservation of the species.

Section 4 of the Act requires that we designate critical habitat on the basis of the best scientific data available. Further, our Policy on Information Standards Under the Endangered Species Act (published in the *Federal Register* on July 1, 1994 (59 FR 34271)), the Information Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Pub. L. 106-554; H.R. 5658)), and our associated Information Quality Guidelines provide criteria, establish procedures, and provide guidance to ensure that our decisions are based on the best scientific data available. They require our biologists, to the extent consistent with the Act and with the use of the best scientific data available, to use primary and original sources of information as the basis for recommendations to designate critical habitat.

### **Prudency Determination**

Section 4(a)(3) of the Act, as amended, and implementing regulations (50 CFR 424.12) require that, to the maximum extent prudent and determinable, the Secretary

shall designate critical habitat at the time the species is determined to be an endangered or threatened species. Our regulations (50 CFR 424.12(a)(1)) state that the Secretary may, but is not required to, determine that a designation would not be prudent in the following circumstances:

(i) The species is threatened by taking or other human activity and identification of critical habitat can be expected to increase the degree of such threat to the species;

(ii) The present or threatened destruction, modification, or curtailment of a species' habitat or range is not a threat to the species, or threats to the species' habitat stem solely from causes that cannot be addressed through management actions resulting from consultations under section 7(a)(2) of the Act;

(iii) Areas within the jurisdiction of the United States provide no more than negligible conservation value, if any, for a species occurring primarily outside the jurisdiction of the United States;

(iv) No areas meet the definition of critical habitat; or

(v) The Secretary otherwise determines that designation of critical habitat would not be prudent based on the best scientific data available.

Designation of critical habitat requires the publication of maps and a narrative description of specific critical habitat areas in the *Federal Register*. The degree of detail in those maps and boundary descriptions is greater than the general location descriptions provided in this proposal to list the silverspot as a threatened species. We are concerned that designation of critical habitat would more widely announce the exact locations of silverspots to collectors. We believe that the publication of maps and descriptions outlining the locations of the silverspot would further facilitate unauthorized collection and trade, as collectors would know the exact locations where silverspots occur.

Although we do not have recent evidence of collection of the silverspot butterfly, we believe this is due to the public being largely unaware of where the silverspot

butterfly occurs. Recent genetic studies reclassifying the multiple subspecies of *nokomis* may serve to increase interest in butterfly collection. In addition, collection of butterflies would be extremely difficult to detect, given the remote locations where the silverspot occurs. The silverspot has been collected in the past, and there is potential for collection pressure to increase if specific locations of populations were to become widely known (Ellis 2020e, pers. comm.; Scott 2020, pers. comm.). Butterflies in general are highly sought after by collectors in the illegal animal trade (Speart 2012, entire). Some experts have expressed concern that small populations/colonies of this subspecies could be impacted by collection pressure if it were to increase after the subspecies is listed (Scott 2020, pers. comm.). Experts have noted that individuals from small populations should not be collected (Scott 2020, pers. comm.). Many of the extant populations of the silverspot are small and currently in low resiliency condition, and therefore could be easily extirpated if collection pressure increased. The silverspot's annual life cycle also lends itself to increased negative population-level impacts if over-collection were to occur. We know of one example of a potential silverspot colony extirpation related to over-collection (combined with vegetation changes) (Scott 2020, pers. comm.). Many populations are on private land and locations of occupied colonies are currently not widely known. Therefore, publishing specific location information would provide a high level of assurance that any person going to a specific location would be able to successfully locate and collect silverspots given the subspecies' site fidelity and ease of capture once located. Identification of locations of populations through publication of a critical habitat designation for the silverspot can be expected to increase the degree of collection threat to the subspecies.

In conclusion, we find that the designation of critical habitat is not prudent for the silverspot, in accordance with 50 CFR 424.12(a)(1), because the silverspot faces a threat

of unauthorized collection and trade, and designation can reasonably be expected to increase the degree of these threats to the subspecies.

## **Required Determinations**

### *Clarity of the Rule*

We are required by Executive Orders 12866 and 12988 and by the Presidential Memorandum of June 1, 1998, to write all rules in plain language. This means that each rule we publish must:

- (1) Be logically organized;
- (2) Use the active voice to address readers directly;
- (3) Use clear language rather than jargon;
- (4) Be divided into short sections and sentences; and
- (5) Use lists and tables wherever possible.

If you feel that we have not met these requirements, send us comments by one of the methods listed in **ADDRESSES**. To better help us revise the rule, your comments should be as specific as possible. For example, you should tell us the numbers of the sections or paragraphs that are unclearly written, which sections or sentences are too long, the sections where you feel lists or tables would be useful, etc.

### *National Environmental Policy Act (42 U.S.C. 4321 et seq.)*

We have determined that environmental assessments and environmental impact statements, as defined under the authority of the National Environmental Policy Act (NEPA; 42 U.S.C. 4321 *et seq.*), need not be prepared in connection with listing a species as an endangered or threatened species under the Endangered Species Act. We published a notice outlining our reasons for this determination in the *Federal Register* on October 25, 1983 (48 FR 49244).

### *Government-to-Government Relationship with Tribes*

In accordance with the President's memorandum of April 29, 1994 (Government-to-Government Relations with Native American Tribal Governments; 59 FR 22951), Executive Order 13175 (Consultation and Coordination with Indian Tribal Governments), and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with Tribes in developing programs for healthy ecosystems, to acknowledge that Tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to Tribes. Thirty-eight Tribes with cultural claims or affiliation to land or with lands currently in the range of the silverspot were contacted via letter to solicit input on the SSA. One Tribe responded and stated that they do not have scientific data but would like to be kept informed of findings of the SSA. We have determined that critical habitat is not prudent for the silverspot, so no Tribal lands (or other lands) will be included in a proposed critical habitat designation.

### **References Cited**

A complete list of references cited in this rulemaking is available on the internet at <https://www.regulations.gov> and upon request from the Western Colorado Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

### **Authors**

The primary authors of this proposed rule are the staff members of the Fish and Wildlife Service's Species Assessment Team and the Western Colorado Ecological Services Field Office.

## List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

### Proposed Regulation Promulgation

Accordingly, we propose to amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

#### PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS

1. The authority citation for part 17 continues to read as follows:

AUTHORITY: 16 U.S.C. 1361–1407; 1531–1544; and 4201–4245, unless otherwise noted.

2. Amend § 17.11, in paragraph (h), by adding an entry for “Butterfly, silverspot” to the List of Endangered and Threatened Wildlife in alphabetical order under INSECTS to read as follows:

#### § 17.11 Endangered and threatened wildlife.

\* \* \* \* \*

(h) \* \* \*

Common name	Scientific name	Where listed	Status	Listing citations and applicable rules
* * * * *	* * *			
INSECTS				
* * * * *	* * *			
Butterfly, silverspot	<i>Speyeria nokomis nokomis</i>	Wherever found	T	[ <i>Federal Register</i> citation when published as a final rule]; 50 CFR 17.47(h). <sup>4d</sup>
* * * * *	* * *			

3. As proposed to be amended at 85 FR 1018 (January 8, 2020), 85 FR 64908 (October 13, 2020), and 86 FR 32859 (June 23, 2021), § 17.47 is further amended by adding a paragraph (h) to read as follows:

#### § 17.47 Special rules—insects.

\* \* \* \* \*

(h) Silverspot butterfly (*Speyeria nokomis nokomis*).

(1) *Prohibitions.* The following prohibitions that apply to endangered wildlife also apply to silverspot butterfly. Except as provided under paragraphs (h)(2) and (3) of this section and §§ 17.4 and 17.5, it is unlawful for any person subject to the jurisdiction of the United States to commit, to attempt to commit, to solicit another to commit, or cause to be committed, any of the following acts in regard to this species:

(i) Import or export, as set forth at § 17.21(b) for endangered wildlife.

(ii) Take, as set forth at § 17.21(c)(1) for endangered wildlife.

(iii) Possession and other acts with unlawfully taken specimens, as set forth at § 17.21(d)(1) for endangered wildlife.

(iv) Interstate or foreign commerce in the course of a commercial activity, as set forth at § 17.21(e) for endangered wildlife.

(v) Sale or offer for sale, as set forth at § 17.21(f) for endangered wildlife.

(2) *General exceptions from prohibitions.* In regard to this species, you may:

(i) Conduct activities as authorized by a permit under §17.32.

(ii) Take, as set forth at § 17.21(c)(2) through (c)(4) for endangered wildlife.

(iii) Take as set forth at § 17.31(b).

(iv) Possess and engage in other acts with unlawfully taken wildlife, as set forth at § 17.21(d)(2) for endangered wildlife.

(3) *Exceptions from prohibitions for specific types of incidental take.* You may take silverspot butterfly without a permit in wet meadow areas where bog violets (*Viola nephrophylla*/*V. sororia* var. *affinis*) are growing and immediately adjacent areas with nectar sources while carrying out the legally conducted activities set forth in this paragraph (h)(3), as long as the activities:

(i) Are conducted with reasonable care. For the purposes of this paragraph, “reasonable care” means limiting the impacts to the silverspot and bog violet by complying with all applicable Federal, State, and Tribal regulations for the activity in question; using methods and techniques that result in the least harm, injury, or death, as feasible; undertaking activities at the least impactful times (e.g., conducting activities that might impact habitat during the flight season) and locations, as feasible; ensuring the number of individuals affected does not impact the existing populations; ensuring no introduction of invasive plant species; and preserving the genetic diversity of populations;

(ii) Consist of one or more of the following:

(A) Grazing:

(1) Moderate grazing (40 to 55 percent vegetative utilization) in late fall to early spring (October 15 to May 31); or

(2) Light grazing (less than 30 percent vegetative utilization) in summer through fall (June 1 to October 14).

(B) Annual haying or mowing in silverspot habitat in the early summer (June 30 or earlier). Blade height must be a minimum of 6 inches, with 8 inches or higher preferred in areas with bog violet. In surrounding drier areas, blade height may be lower than 6 inches where the violet is not present.

(C) Prescribed burning:

(1) In the spring (March 1 to April 30); or

(2) In the fall (October 15 to December 15), if the silverspot butterfly has been shown to not be present in a given year through adequate monitoring (i.e., multiple surveys at times when butterflies are active).

(D) Brush removal every 4 to 5 years. Removal can be by mechanical means, burning, grazing, or herbicide application if in compliance with other excepted activities



in this paragraph (h)(3). If mechanical means such as a brush hog is used, the blade must be set to 8 inches or higher. If herbicides are used, an appropriate systemic herbicide to prevent regrowth must be applied to cut stems, but broadcast spraying is prohibited.

(E) Spot spraying, hand pulling, or mowing of noxious weeds. Broadcast spraying of noxious weeds is prohibited.

(F) Replacement of fence poles and wire, and aboveground removal of woody vegetation along fence lines. If removal of woody vegetation is done by machine, such as a brush hog, the machine blade must be set 8 inches or higher. We recommend a systemic herbicide applied to the cut stems of woody vegetation.

(G) Maintenance of other existing structures within and immediately adjacent to silverspot habitat if activities are kept within the confines of already disturbed ground.

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**Martha Williams,**  
*Director,*  
*U.S. Fish and Wildlife Service.*